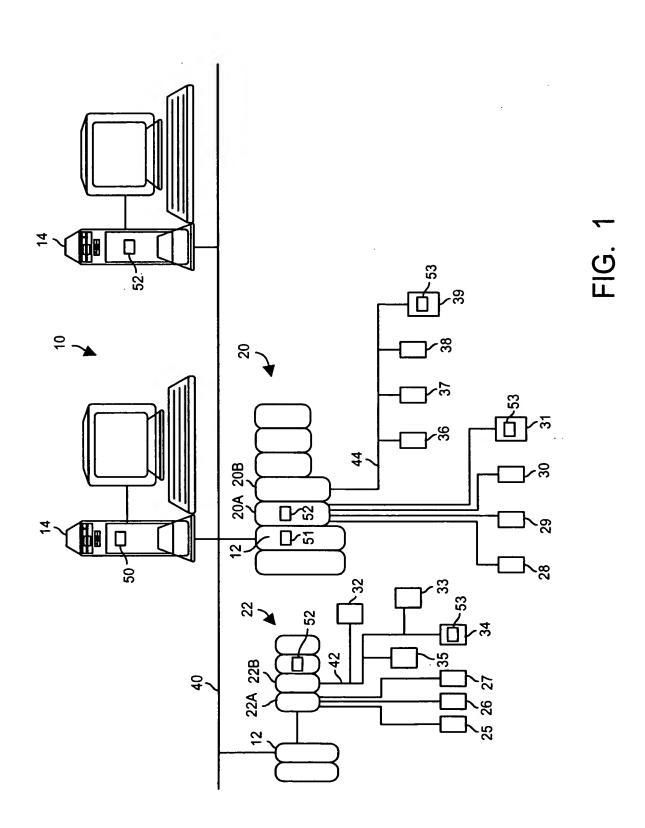
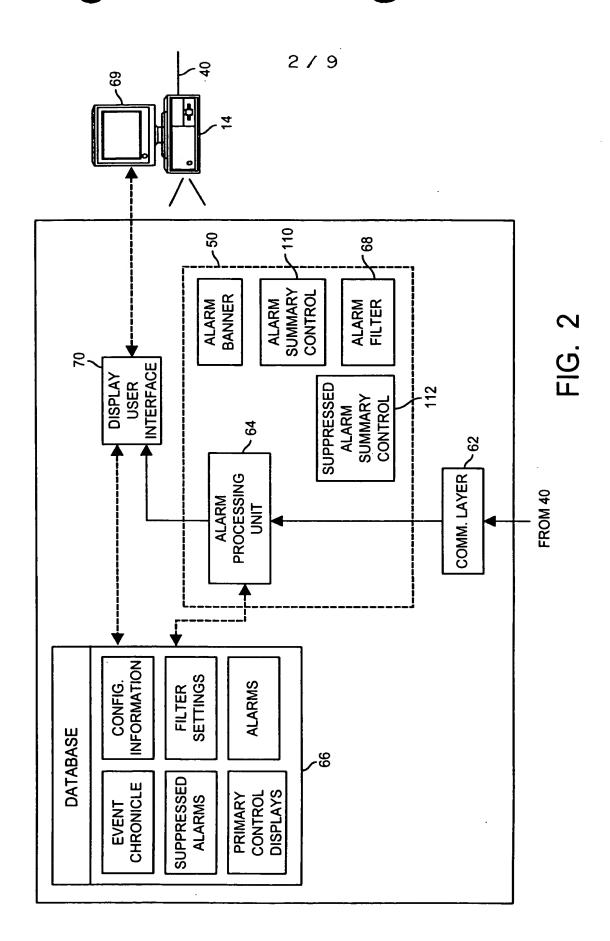
Inventor: Sheet 1 of 9

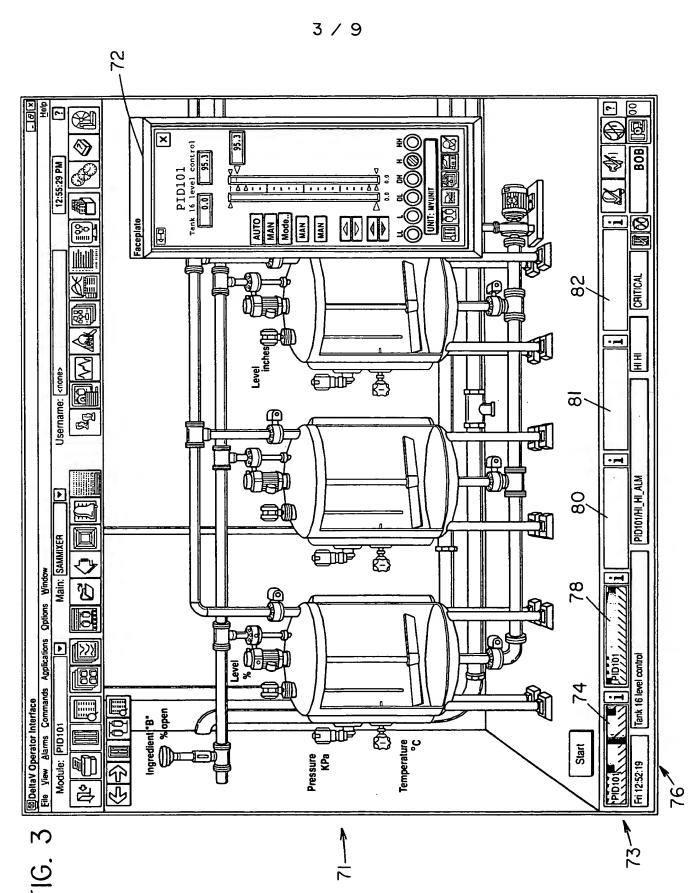
06005/37172 Enhanced Device Alarms in a Process Control System Robert B. Havekost (fig. 1)

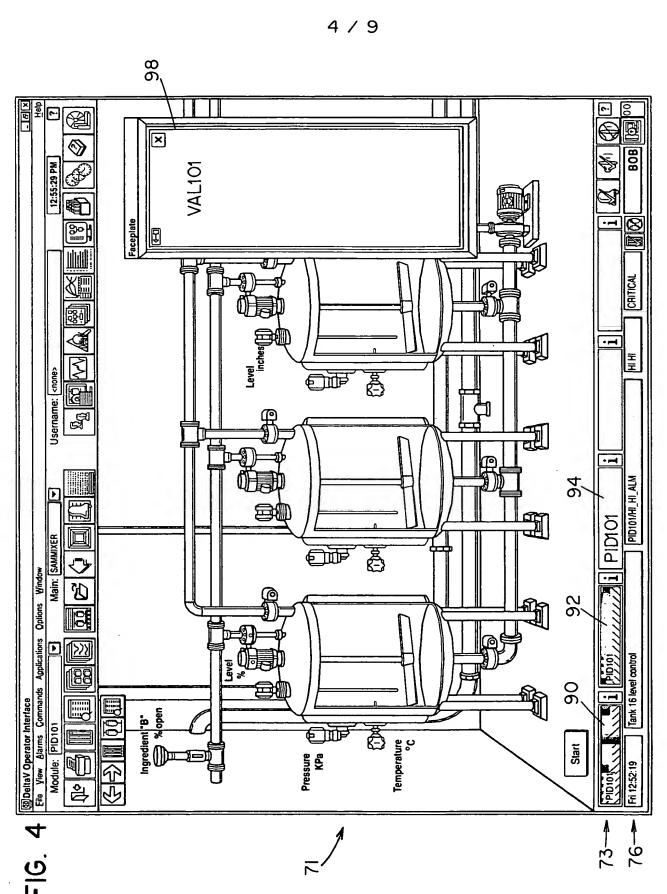
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Sheet 5 of 9 (figs. 5-7)

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	JH WARNING	Priority 1027 Limit 1000 WARNING		i	FAILED CRITICAL	Priority 103.47 CRITICAL			FAILED CRITICAL	Prionity CRUTICAL
i	low FIC-101/HI_ALM HIGH	Time Unit Alarm Parameter Module Description Alarm Word Alarm Message Mon 15:10:04 REACTOR1 FIC-101/HI_ALM Reactor 1 jacket heat flow HIGH High Alarm Value 1027 Limit 1000	FIG. 5		FV-101/FAILED_ALM FAI	Time Unit Alarm Parameter Module Description Alarm Word Alarm Message Mon 15:10:04 REACTOR1 FV-101/FAILED_ALM Reactor 1 inlet valve FAILED I/P Feedback limit: 103.47	FIG. 6		CTLR1/CARD04_FAIL	Alarm Parameter Module Description Alarm Word Alarm Message CTLR1/CARD04_FAIL Room 4, cab 3, pos 2 FAILED Channel 7 failed
	Mon 15:10:04; Reactor I jacket heat flow	Alarm Parameter TOR1 FIC-101/HI_ALM		i FIC-101	Mon 15:10:04; Reactor I inlet valve	Alarm Parameter TOR1 FV-101/FAILED_A		i FIC-101	Mon 15:10:04 Room 4, cab 3, pos 2	Alarm Parameter CTLR1/CARD04_F
FIC-101	Mon 15:10:04:	Time Unit Mon 15:10:04 REAC		FV-101	Mon 15:10:04;	Time Unit Mon 15:10:04 REAC	·	CTLRI	Mon 15:10:04	Time Unit Mon 15:10:04

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(figs. 8 & 9)

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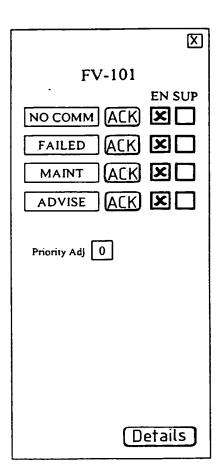


FIG. 8

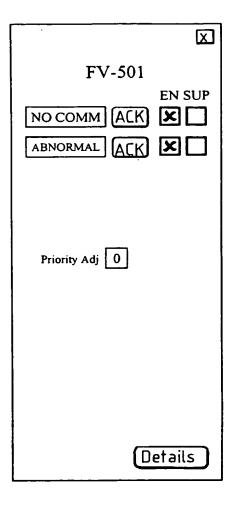


FIG. 9

06005/37172 Enhanced Device Alarms in a Process Control System Robert B. Havekost (figs. 10 & 11)

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FIG. 10

Show Alarms		Show Priority	X
Alarm types:	Enable	Level >=	
Process	×	4 All alarms	
Hardware	×	8 Warning	
Device		No alarms	

FIG. II

+

WARNING WARNING

Value = 1011.4 Limit = 1000

Message

I/P Feedback limit 103.7 Value = 81.4 Limit = 78

Reactor 1 jacket flow sensor

FV-101/FAILED ALM

Wed 11:48:54 REACTOR1

Wed 12:46:30

Wed 10:51:18 REACTOR3 LIC-301/HI_HI_ALM

Fank 5 outlet flow control

Description

Alarm Parameter

Ë

FIC-501/HI ALM

WARNING WARNING WARNING WARNING

Value = 1011.4 Limit = 1000

Fravel limit 35001

MAIN

Reactor 2 jacket flow sensor

FV-102/MAINT ALM

Wed 08:56:06 REACTOR2

Wed 07:58:30 Wed 07:00:54

Wed 09:53:42

FIC-501/HI ALM

ank 5 outlet flow control Tank 5 outlet flow control

ank 5 outlet flow control

Reactor 3 Level control

Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000

CRITICAL

ADVISORY

Value = 81.4 Limit = 78 Value = 81.4 Limit = 78

풀

Reactor 1 Level control Reactor 2 Level control

Wed 06:03:18 REACTOR1 LIC-101/HI_HI_ALM Wed 05:05:42 REACTOR2 LIC-102/HI_HI_ALM

FIC-501/HI_ALM

FIC-501/HI_ALM

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ADVISORY

ADVISORY

Low variation for 60 minutes

ADVISE

FV-502/ADVISE ALM Tank 5 outlet flow sensor

Wed 04:08:06

Sort: Banner

Device:

8

Process:

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(figs. 12-14)

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ADVISORY ADVISORY ADVISORY WARNING WARNING WARNING WARNING WARNING WARNING **Priority** CRITICAL Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 /alue = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Low variation for 60 minutes I/P Feedback limit 103.7 /alue = 81.4 Limit = 78 Value #86% Limits 78 /alue = 81.4 Limit = 78 Travel limit 35001 ADVISE Alam Ξ ᇁ Ξ Reactor 2 jacket flow sensor Reactor 1 jacket flow sensor Tank 5 outlet flow control ank 5 outlet flow control Tank 5 outlet flow control Tank 5 outlet flow control Reactor & Level control FV-502/ADVISE ALM Tank 5 outlet flow sensor Reactor 1 Level control Reactor 2 Level control Description Sort: Banner FV-101/FAILED ALM FV-102/MAINT ALM Wed 10:51:18 REACTORS LIC-301/HI HIFALM. Wed 06:03:18 REACTOR1 LIC-101/HI HI ALM Wed 05:05:42 REACTOR2 LIC-102/HI HI ALM Alarm Parameter FIC-501/HI ALM FIC-501/HI ALM FIC-501/HI_ALM FIC-501/HI ALM Wed 08:56:06 REACTOR2 Wed 11:48:54 REACTOR1 Device: En: Wed 09:53:42 Ned 04:08:06 Wed 12:46:30 Wed 07:58:30 Wed 07:00:54 34 Occurred Process:

ADVISORY WARNING WARNING **ADVISORY** WARNING WARNING ADVISORY WARNING WARNING Priority CRITICAL Value = 1011,4 Limit = 1000 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Low variation for 60 minutes I/P Feedback limit 103.7 Value = 81.4 Limit = 78 Value = 81.4 Limit = 78 Value = 81.4 Limit = 78 Message Travel Ilmit 35001 ADVISE FAILED Alarm Ξ Ξ Ξ Reactor 2 jacket flow sensor Reactor 1 jacket flow sensor Tank 5 outlet flow control Tank 5 outlet flow control Fank 5 outlet flow control Tank 5 outlet flow control FV-502/ADVISE ALM Tank 5 outlet flow sensor Reactor 3 Level control Reactor 1 Level control Reactor 2 Level control Description FV-101/FAILED_ALM FV-102/MAINT ALM Wed 10:51:18 REACTOR3 LIC-301/HI HI ALM Wed 05:05:42 REACTOR2 LIC-102/HI_HI_ALM Wed 06:03:18 REACTOR1 LIC-101/HI_HI_ALM Alarm Parameter FIC-501/HI ALM FIC-501/HI ALM FIC-501/HI_ALM -IC-501/HI ALM Wed 08:56:06 REACTOR2 Wed 11:48:54 REACTOR1 Unit Wed 07:58:30 Wed 09:53:42 Wed 07:00:54 Wed 12:46:30 **Ned 04:08:06** Occurred

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Date/Tin	Date/Time Event Type	Category	Area	Node	Module	Parameter	State	Level	Descl	Desc2
ххххх	ALARM	PROCESS	AREA_A	ST. CT.	REACTORIFIC-101	HI_ALM	ACT/UNACK	II-WARNING	HGH	High Alarm Value 1027 Limit 1000
хххххх	ALARM	PROCESS	AREA_A	CTLRI	REACTORI/FIC-101	HI_ALM	ACT/ACK	11-WARMING	HIGH	High Alarm Value 1014 Limit 1000
хахаха	ALARM	PROCESS	AREA_A	I CTLR!	REACTORIFIC-101	II HI_ALM	INACT/ACK	11-WARNING	HIGH	High Alarm Value 998 Limit 1000
ate/Time	Date/Time Event Type	Category	Area	Node	Module	Parameter	Sure	Level	Desci	Desc?
KUAKI	ALARM	DEVICE	AREA_A	CTLRI	REACTORI/FV-101	FAILED_ALM	ACT/UNACK	15-CRITICAL	FALLED	I/P Feedback limited: 103.47
					*					
AULKU	ALARM	DEVICE	AREA_A	CTI.RI	REACTOR I/FV-101	FAILED_ALM	ACT/ACK	15-CRITICAL	FALLED	I/P Feedback limited: 103.47
UXXX	ALARM	DEVICE	AREA_A	CTLR!	REACTOR I/FV-101	FALLED_ALM	DNACT/ACK	15-CRITICAL	¥	I/P Feedback limited: 99.8